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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

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THE PRESENT EELGRASS SITUATION ALONG THE AMERICAN ATLANTIC COAST

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No detailed or complete survey of the eelgrass (Zostera marina) situation along the Atlantic coast of the United States has been made since the issuance by the Bureau of Biological Survey of a mimeographed leaflet on the subject in February, 1935. 1/ Brief surveys, however, have recently been made by the Biological Survey of a fair number of areas along the coast from Hatteras, North Carolina to Cole Harbor, Halifax County, Nova Scotia, and the Bureau has also received numerous reports from cooperators at many additional points.

In general it may be reported that conditions are still extremely variable, with many areas no better than six and twelve months ago and some even worse. Considering the coast as a whole, however, there may be said to have been a slight improvement during the past six months. Evidence of the disease seems to persist in every section, although the plants in some localities seem to be developing an immunity against it or else to be appearing in a strain that is more resistant to the disease.

1/ Cottam, Clarence. The present situation regarding eelgrass (Zostera marina). U. S. Dept. Agr., Bureau of Biol. Survey, Wildlife Research and Management Leaflet BS-3, pp. 1-7. Feb. 1935.

The growth and abundance of eelgrass is almost normal in a number of areas, usually restricted, however, to localities of reduced salinity. In many of the Chesapeake Bay sections of Virginia and Maryland, for example, the plant is again sufficiently abundant to be washed ashore in sizable windrows and to be gathered for packing crabs and other shellfish.

A good stand is again reported from Shinnecock and Mecox Bays, on Long Island, New York, and further improvement has been noted in Great South Bay, Long Island. It is not uncommon to receive a number of favorable reports on eelgrass recovery in the spring or early summer, only to find later in the year that the promising stands have been almost denuded. It is probable that some of the more saline areas where there are favorable indications this year will yet show a recurrence of the malady.

In Cole Harbor and Bras d'Or Lakes, Nova Scotia; Tabisintac River, Northumberland County, New Brunswick; and Cobscooks Bay, Washington County, Maine, there was in July an encouraging growth of plants, which seemed to indicate an improvement over previous conditions. In other places where one would expect the growth to be equally as promising, little or no improvement was evident. In the more open and coastal bays of Virginia and Maryland; Buzzards Bay and parts of Cape Cod, Massachusetts; Moriches Bay, Long Island, New York; and on the eastern border of Pamlico Sound, North Carolina, little or no improvement over conditions of a year ago could be detected. Rather extensive flats that formerly supported a dense stand of the plant became shifting sand flats when the disappearance of the eelgrass left the firmer soil exposed to erosion. Some of these flats later became covered with wigeongrass (Ruppia maritima), which served as an effective check against the moving sand. This plant is fast restoring many of the ecological associations to a stage comparable with those that formerly existed, and as a result waterfowl food conditions are noticeably improved, even though eelgrass may not have returned.

On the American Pacific coast the eelgrass is still as abundant as ever. The Biological Survey is conducting experiments in the transplanting of eelgrass, and is also planting seeds of the west-coast variety to similar and what would appear to be favorable situations on the east coast. Only time can tell whether any of these attempts will be successful.

NOTES ON ZOSTERA MARINÅ IN UPPER BUZZARDS BAY, MASSACHUSETTS

Neil E. Stevens

The possibilities of the return of eelgrass to at least some of our coastal waters suggested by the recent observations of Cottam will intensify interest in the so-called "wasting disease" of this plant, which has already been the subject of much comment in Europe and America. In view of our very limited knowledge of this whole problem it seems probable that almost any accurate records of the fluctuations of eelgrass in individual localities may be of ecological if not pathological value in the future, and it thus seems worth while to report the results of somewhat fragmentary observations in upper Buzzards Bay, Massachusetts.

The extreme upper end of Buzzards Bay has long been known locally as Buttermilk Bay and is so designated on Marine charts. It is an extremely shallow body of water, much of it being less than six feet deep at low tide. It is connected with the main bay by Cohassett Narrows, through which tides flow with considerable force. The only fresh water stream of any size entering the bay is Red Brook, which at this point lies in the boundary between the towns of Wareham and Plymouth.

For many years the bay has been notorious for the abundance of eelgrass which at low tide constitutes a considerable nuisance to boating. Specifically, as late as September 1931, in the areas designated as Millers Cove and Little Buttermilk Bay (Figure 52), eelgrass was present in undiminished abundance in spite of blasting experiments to produce a channel for boats in Millers Cove.

In September 1932 the Zostera marina was so generally dead that no wholly healthy areas were observed and huge windrows of dead grass covered the shores.

A brief survey (one low tide) on May 6, 1933, in which a circuit of the bay was made in a row boat, failed to reveal any living eelgrass except some seedlings in local areas in Little Buttermilk Bay.

A somewhat more careful survey (four low tides), July 4, 5, 6, and 7, 1935, however, disclosed the presence of four or five patches each a few square yards in extent off the mouth of Red Brook at approximately the place indicated by □ on the map (Figure 52).

In Little Buttermilk Bay there is an extensive growth of Ruppia maritima, which of course may have been there previously in association with the Zostera marina. In Millers Cove, however, no Ruppia or other reed plants were observed, although in the shallow waters there was a considerable growth of algae.

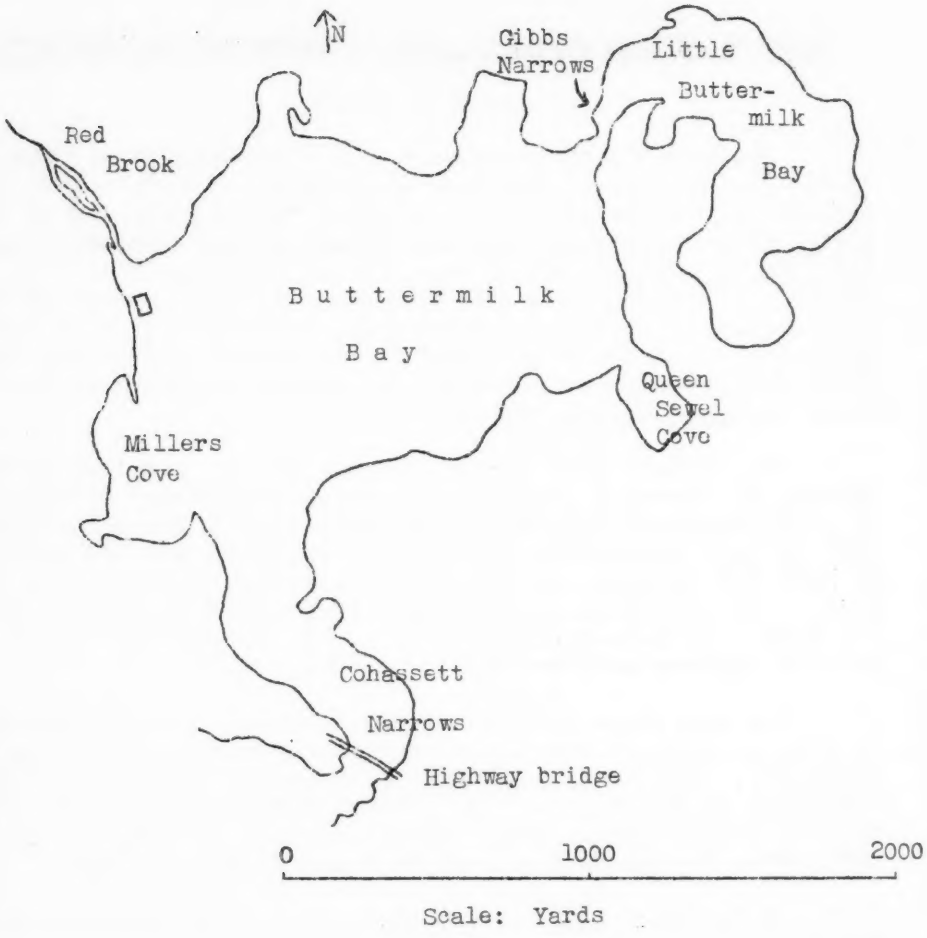

Figure 52. Map of Upper Buzzards Bay, Massachusetts. Eel grass (Zostera Marina) found in 1935 at □ .

ONION MILDEW PREVALENT IN NEW YORK

A. G. Newhall

Recent surveys of the onion crop in four central muck coun-counties of Madison, Oswego, Wayne, Onondaga, and Cayuga have revealed the presence of Peronospora destructor in nine-tenths of the fields. One man claims 50 per cent loss though he has no more than many others. There will probably be at least 15 per cent loss for these counties on the late crop. The set crop and early, seeded crops have been very slightly affected.

The first appearance was July 12 in Wayne and Onondaga Counties.

There is evidence from two fields at least that the fungus remained viable in the soil without its host plant since the last epiphytotic in 1932. There is also evidence from many fields that the seed was in several cases responsible for initial infections this year as blight appeared as early and spread as rapidly on muck growing its first crop of onions, as on old onion soil.

CEREAL RUSTS IN NORTH DAKOTA

W. E. Brentzel

In the period between July 22 and August 5, I had an opportunity to make a careful survey of rust and other diseases of cereals in North Dakota. Most of the border counties were covered and the State was traversed diagonally from the southeast corner to the northwest corner. It was during the period of this survey that extremely high temperatures developed in this region. The very rusty wheat crops reacted to the heat very quickly.

The common wheats dried up, presenting a brownish dark appearance instead of the golden color which one expects to see in the ripened grain fields of this region. No doubt the great deterioration in quality and quantity of grain is in no small measure chargeable to heat. Without any rust serious damage would have resulted. This conclusion is further substantiated by the fact that barley, which before the heat wave was green, thrifty, and relatively free from rust, dried up so quickly that much of the grain is shrivelled and light.

The survey covered 30 counties in North Dakota and was made at a time when rust had reached, in general, its maximum development. The degree of stem rust infection in common wheats (Marquis and Ceres) for North Dakota ranged from a trace to 100 per cent, with an average

near 90 per cent. The few fields with the lower infections were sown very early and escaped damage somewhat. Such fields were found very rarely. The extent of damage chargeable directly or indirectly to stem rust in common wheats will range from a trace to about 90 per cent, with the average perhaps near 65 per cent. With few exceptions the entire State was affected. In some of the areas with higher altitudes in the western part, rust was not severe. In the western parts of Williams and McKenzie Counties there was scarcely any stem rust. A part of Dunn County in the vicinity of the Killdeer Mountain escaped. The yield of grain from these regions is high and the quality excellent.

In regions where rust was less intense, Ceres wheat was obviously standing up better than Marquis. In the greater portion of the State where infections ranged in the 90's, there was little or no difference between these varieties in respect to either the degree of infection or the extent of damage.

In general, the durum wheats, oats, and barley were not seriously damaged. However, the durums at the time of this survey were still green and many fields were in the milk stage of development. While rust had largely run its course in common wheat, deterioration was still in progress in the durums. Many of the durum fields, particularly the late sown fields, will deteriorate more than now seems apparent. The degree of infection in the durums ranged from a trace to 65 per cent. I shall not undertake to estimate the damage owing to the fact that deterioration is yet in progress.

Stem rust in oats and barley was not generally severe. Readings of 90 per cent infection in barley were found occasionally, but generally infection ranged from 5 to 35 per cent. Wisconsin #38 barley, where grown, seemed to have considerable stem rust resistance. Many of the barley fields were mature and the damage from stem rust had not reached more than perhaps 5 or 10 per cent. There is considerable late sown barley in which the damage may range higher.

Rainbow oats showed good resistance to stem rust, while other varieties had from 5 to 65 per cent infection. The damage in oats perhaps will not reach more than 5 to 10 per cent for the State.

Crown rust (Puccinia coronata) of oats was unusually severe in all fields examined. The infection often ranged up to 90 per cent and the loss for the State will perhaps be about 10 per cent.

During the past several years it has been difficult to find even traces of crown rust in this State--additional evidence that the rust this season has come from sources outside the State.

The fact that durum, oats, and barley, contrary to the general rule, have withstood rust better this year than Ceres wheat is favorable to the conclusion that new forms of stem rust may have been responsible for this epidemic. However, Ceres wheat is withstanding rust better than Marquis in regions with less severe rust, such as in McKenzie County, and this circumstance is in agreement with past experiences with rust in these wheats. It seems reasonable, therefore, to suppose that Ceres wheat possesses no physiological resistance to stem rust and that what may have appeared to some as resistance is due to its morphological make-up, which is variable.

ROOT ROT OF WHEAT IN NORTH DAKOTA

Considerable root-rot developed this year in the cereal crops, particularly in wheat. Rots caused by Fusarium and by Helminthosporium were noted in both common and durum wheats. The occurrence was general but not severe, except in a few restricted areas. Individual fields of durum with 50 to 75 per cent damage were noted. The disease generally affected from a trace to 2 per cent of the stools.

Excessive soil moisture appears to have been a factor in some regions. (W. E. Brentzel).

SILVER LEAF ON FRUIT TREES IN NEW YORK

E. M. Hildebrand

On June 5 an unusual outbreak of silver leaf (Stereum purpureum) was found in the young Montmorency cherry orchard of George Lamont near Albion, Orleans County, New York. This orchard contains 440 trees and when reexamined on July 26, 65 were definitely diseased while 25 others had questionable symptoms. Although rather general in distribution over the orchard the disease was more concentrated on the north side suggesting perhaps some relationship to the exposure and possibly to the extremely cold winter of 1933-1934. When the diseased trees were examined on July 26 they had a good crop of fruit ready for picking and were suffering from no apparent reduction in set. In five instances the infection was general throughout the trees but more commonly one or more diseased branches were located on one or more sides or in the center.

According to Dr. A. B. Burrell, silver leaf has been more prevalent on apple in the Champlain Valley since the cold winter of 1933-1934, but this does not seem to apply to other sections of the state.

CORYNEUM BEIJERINCKII ON PEACH AND APRICOT IN INDIANA

R. C. Baines

I wish to make a correction to the report of the occurrence of Bacterium pruni on peaches at Mitchell, Indiana, which appeared in the July 1 issue of the Plant Disease Reporter (p. 152).

The two peach orchards were visited later on July 18 by Mr. Leslie Pierce and the writer and the infection identified by Mr. Pierce as the pustular spot caused by Coryneum beijerinckii.

During the summer no new infections were noticed on the fruit or foliage. The severely infected fruits dropped before reaching maturity. At harvest time on August 21 the spots had become pustular and corky. Approximately 20 per cent of the harvested fruit was severely blemished and 40 per cent slightly blemished. Fruit which showed less than five spots or pustules was included under slight blemish.

Specimens of pustular spot on peach were also collected by Munroe McCown in five orchards in Delaware County, Indiana. He classed the infection in these orchards as very slight. From an individual tree at Howe, Indiana, green apricot fruits practically covered with pustules were received. (Aug. 27)

DUTCH ELM DISEASE ERADICATION

Reports from the Bureau of Entomology and Plant Quarantine, for the weeks ending August 10 and August 17, are summarized as follows.

Three more diseased trees have been found in Indianapolis and two more in Cleveland.

During the two weeks the boundary of the infected zone in New Jersey was extended ten miles to the southeast in Monmouth County, by three trees near Holmdel, and six miles to the west in Sussex County by three near Ogdensburg. One of the trees in the new area in Monmouth County was 86 inches in diameter, and was the largest elm thus far confirmed as infected with the Dutch elm disease in New Jersey. The nearest infection in New Jersey to this area is sixteen miles northwest. Infections on Staten Island, New York, are only ten miles directly north of the Holmdel trees, indicating that the disease may have spread from that source.

The infected zone in New York also was increased by the finding of a diseased tree near Mahopac Falls, on the southern border of Putnam County, nine-and-a-half miles north of the nearest known infected tree. Upon removal, this tree showed symptoms of infection in the 1934 wood, as well as this year's.

There has been no extension of the known diseased area in Connecticut, although one tree has been confirmed in the town of Westport. This is approximately half-way between Norwalk and Fairfield, where infections were confirmed in 1934.

Additional scouting in outlying areas was started in Louisville, Chicago, Philadelphia, Boston, Dayton, New Orleans, and Kansas City. No confirmation has been received on suspects collected in these areas. Scouting had already been started in Baltimore, Cincinnati, Cleveland, Indianapolis, and Norfolk.

The Great Piece Meadows in Essex and Morris Counties, New Jersey, is being made an elm-free area. This is largely marsh or waste land and contains one of the heaviest infection centers of the entire zone.

The number of confirmed and eradicated diseased trees up to August 17 is as follows:

	Confirmed	Removed
Connecticut		
During week ending August 10	5	
Week ending August 17	2	
During the two weeks	7	
Total up to August 17	105	101
New Jersey		
Week ending August 10	132	
Week ending August 17	438	
During the two weeks	570	
Total up to August 17	6994	6279
New York		
Week ending August 10	96	
Week ending August 17	177	
During the two weeks	273	
Up to August 17	4054	3887
Other		
Week ending August 17	5	
Up to August 17	14	8
Totals		
Confirmed during the two weeks	855	
Confirmed up to August 17	11167	
Removed up to August 17		10275